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ABSTRACT

Mathematics learning objectives and specifications for third graders, which are congruent with the Texas "State Board of Education Rules for Curriculum," are presented. They are designed for use by teachers and test development specialists involved with the preparation of the Texas Educational Assessment of Minimum Skills (TEAMS) tests. Beginning with the 1985-86 school year, the TEAMS tests have been based on these objectives. Skill areas covered by the objectives include: (1) arrange three whole numbers (WNs) from least to greatest or greatest to least; (2) identify the place value for a given digit of a three- or four-digit WN; (3) complete a pattern involving multiples of 2, 3, 4, 5, or 10; (4) express WNs in expanded notation; (5) use pictorial models to identify fractional parts of a whole or of a group of like objects; (6) add WNs having up to three digits; (7) subtract WNs having up to three digits; (8) solve one-step word problems involving addition of WNs; (9) solve one-step word problems involving subtraction of WNs; (10) select the unit of measure used to determine length, weight/mass, or capacity/volume; and (11) identify pictorial models of two- and three-dimensional shapes. Sample test items are provided for each of the skill areas. (TJH)

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ED298142

Texas Educational Assessment of Minimum Skills

Mathematics Objectives and Measurement Specifications 1986-1990 Grade 3

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1986

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Texas Educational Assessment of Minimum Skills

Mathematics Objectives and Measurement Specifications 1986-1990 Grade 3

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Division of Student Assessment
Texas Education Agency
Austin, Texas

FOREWORD

The learning objectives contained in this volume are congruent with the State Board of Education Rules for Curriculum which outlines the rules and procedures for implementation of Section 21.101 of the Texas Education Code. These objectives and the measurement specifications are provided for use by teachers and other educators responsible for pupil instruction and for test development specialists involved with the preparation of the Texas Educational Assessment of Minimum Skills (TEAMS) tests. Beginning with the 1985-86 school year, the TEAMS tests were based upon the objectives in this publication.

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TEXAS EDUCATIONAL ASSESSMENT OF MINIMUM SKILLS

GRADE 3 MATHEMATICS

List of Objectives

Skill Area: Number Concepts

Objective 1. Arrange a group of three whole numbers from least to greatest or greatest to least.

Objective 2. Identify the place value for a given digit of a three- or four-digit whole number.

Objective 3. Complete a pattern involving multiples of 2, 3, 4, 5, or 10.

Objective 4. Express whole numbers in expanded notation.

Objective 5. Use pictorial models to identify fractional parts of a whole or of a group of like objects.

Skill Area: Computation

Objective 6. Add whole numbers having as many as three digits, with or without regrouping.

Objective 7. Subtract whole numbers having as many as three digits, with or without regrouping.

Skill Area: Problem Solving

Objective 8. Solve one-step word problems involving addition of whole numbers.

Objective 9. Solve one-step word problems involving subtraction of whole numbers.

Skill Area: Measurement

Objective 10. Select the unit of measure used to determine length, weight/mass, or capacity/volume.

Skill Area: Geometry

Objective 11. Identify pictorial models of two- and three-dimensional shapes.

GRADE 3 MATHEMATICS

General Specifications

I. Test Items

A. All written material, including instructions, item stems, solutions, and answer choices, will have vocabulary drawn from the Texas Education Agency (TEA) cumulative vocabulary list through Grade 2, except for proper nouns.

B. Word problems will represent various ethnic groups of populations in Texas. The three main groups are black, Hispanic, and white.

C. Word problems will be free of stereotyping of age, sex, ethnicity, and geographical location.

D. For each item, there will be four responses with only one correct response.

E. Neither "none of the above" nor "all of the above" will be used as an answer choice.

F. Problem situations will be appropriate for third grade students.

G. All fractions will be written in vertical format.

II. Test Package Format

A. The test will be printed in colored ink on white paper.

B. Sufficient white space will be included on each page.

C. Type size will be appropriate for third grade students.

D. Test items and their corresponding answer choices will appear on the same page.

E. Graphic displays and their corresponding test items and answer choices will appear on the same or facing pages.

OBJECTIVES AND MEASUREMENT SPECIFICATIONS

SKILL AREA: NUMBER CONCEPTS

Objective 1

Arrange a group of three whole numbers from least to greatest or greatest to least.

Description of Test Items

1. No two numbers in an item will have reversed digits (e.g., 87, 78).
2. No more than one zero will appear in any number.
3. Both types of items will be used (greatest to least and least to greatest).
4. The words least and greatest will be underlined in the item stem.
5. Numbers will be limited to three digits.

Description of Answer Choices

1. If the stem asks for arranging numbers from greatest to least, no incorrect answer will present these numbers ordered from least to greatest. If the stem asks for arranging numbers from least to greatest, no incorrect answer will present these numbers ordered from greatest to least.
2. All answer choices will be comprised of the same numbers arranged in different orders.
3. Commas will not be used to separate the numbers presented in each answer choice.
4. The answer choices will be clearly distinguishable from each other.

Examples of Test Item

Read each question. Mark your answer.

(a) Which group below shows the three numbers in order from greatest to least?

- 131 128 121 (correct answer)
- 128 121 131 (incorrect sequence)
- 131 121 128 (incorrect sequence)
- 121 131 128 (incorrect sequence)

(b) Which group below shows the three numbers in order from least to greatest?

- 243 245 255 (correct answer)
- 255 243 245 (incorrect sequence)
- 245 243 255 (incorrect sequence)
- 243 255 245 (incorrect sequence)

SKILL AREA: NUMBER CONCEPTS

Objective 2

Identify the place value for a given digit of a three- or four-digit whole number.

Description of Test Items

1. The whole numbers used will have three or four digits.
2. Test items will not include total value or face value (e.g., in the number 85, 8 is the face value of the number in the tens place; ten is the place value; 80 is the total value of that digit).
3. No commas will be used in four-digit whole numbers.
4. There will be no repetition of digits in the numbers used.
5. The place value referred to in the item stem will be underlined.
6. Items will include a variety of the following:
   a. identifying the name for a given place value and
   b. identifying the numeral that has a given place value.

Description of Answer Choices

References to place value names can range from ones to thousands.

Examples of Test Item

Read each question. Mark your answer.

(a) In the number 8316, the 3 is in what place?

- ⬭ hundreds (correct answer)
- ⬭ thousands (incorrect place value)
- ⬭ tens (incorrect place value)
- ⬭ ones (incorrect place value)

(b) In 5142, which numeral is in the thousands place?

- ⬭ 5 (correct answer)
- ⬭ 1 (incorrect answer)
- ⬭ 4 (incorrect answer)
- ⬭ 2 (incorrect answer)

-3-

SKILL AREA: NUMBER CONCEPTS

Objective 3

Complete a pattern involving multiples of 2, 3, 4, 5, or 10.

Description of Test Items

1. A boxed series of four numbers followed by three blank spaces will be presented.
2. Eligible numbers will be whole numbers less than 100.
3. The four numbers in the box will be consecutive multiples of 2, 3, 4, 5, or 10 placed in ascending order.
4. Patterns will begin with a multiple of the number requested for counting, excluding the number itself.
5. Commas will separate numbers in the series.
6. At least three different multiple patterns will be tested in the four items.

Description of Answer Choices

The numbers used in the answer choices will not exceed two digits.

Example of Test Item

Complete the pattern. Mark your answer.

What numbers go in the next three spaces?

20, 30, 40, 50, __, __, __

- ⬭ 60, 70, 80 (correct answer)
- ⬭ 70, 80, 90 (incorrect answer)
- ⬭ 52, 54, 56 (incorrect answer)
- ⬭ 55, 60, 65 (incorrect answer)

SKILL AREA: NUMBER CONCEPTS

Objective 4

Express whole numbers in expanded notation.

Description of Test Items

1. Numbers to be expressed in expanded notation will not include zeros.
2. Numbers will be read from left to right (i.e., descending value).
3. Numbers will have three or four digits.
4. Items will include a variety of the following:
   a. given the number, identify the expanded notation in either words or numbers and
   b. given the expanded notation in either words or numbers, identify the number.

Description of Answer Choices

1. Answer choices identifying expanded form will be in either word or number format.
2. Answer choices identifying numbers will be in either word or number format.

Examples of Test Item

Read each question. Mark your answer.

(a) Which number is 4000 + 100 + 20 + 3?

- ⬭ 4123 (correct answer)
- ⬭ 4003 (incorrect whole number)
- ⬭ 3214 (incorrect whole number)
- ⬭ 1234 (incorrect whole number)

(b) 4123 =

⬭	4 thousands + 1 hundred + 2 tens + 3 ones	(incorrect answer)
⬭	4 hundreds + 1 ten + 23 ones	(incorrect expanded notation)
⬭	41 tens + 23 ones	(incorrect expanded notation)
⬭	4 thousands + 12 hundreds + 3 tens	(incorrect expanded notation)

—3—

SKILL AREA: NUMBER CONCEPTS

Objective 5

Use pictorial models to identify fractional parts of a whole or of a group of like objects.

Description of Test Items

1. The fractional parts to be identified will be limited to $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{3}$, and $\frac{3}{4}$.
2. Shading will indicate the fractional part to be identified.
3. All sets or wholes will be divided into equal parts.
4. A set will consist of no more than four elements.
5. Optical illusions will not be used.
6. Items will include a variety of the following:
   a. identify a given part of a whole,
   b. identify a given part of a set,
   c. given a fraction, identify the appropriate pictorial model, or
   d. given a fraction, identify the set which indicates the appropriate part.

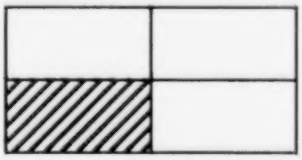
Description of Answer Choices

All sets or wholes presented in the answer choices will be divided into equal parts.

Examples of Test Item

Read each question. Mark your answer.

(a) What part of this shape is shaded?



○ $\frac{1}{4}$ (correct answer)

○ $\frac{1}{3}$ (incorrect answer)

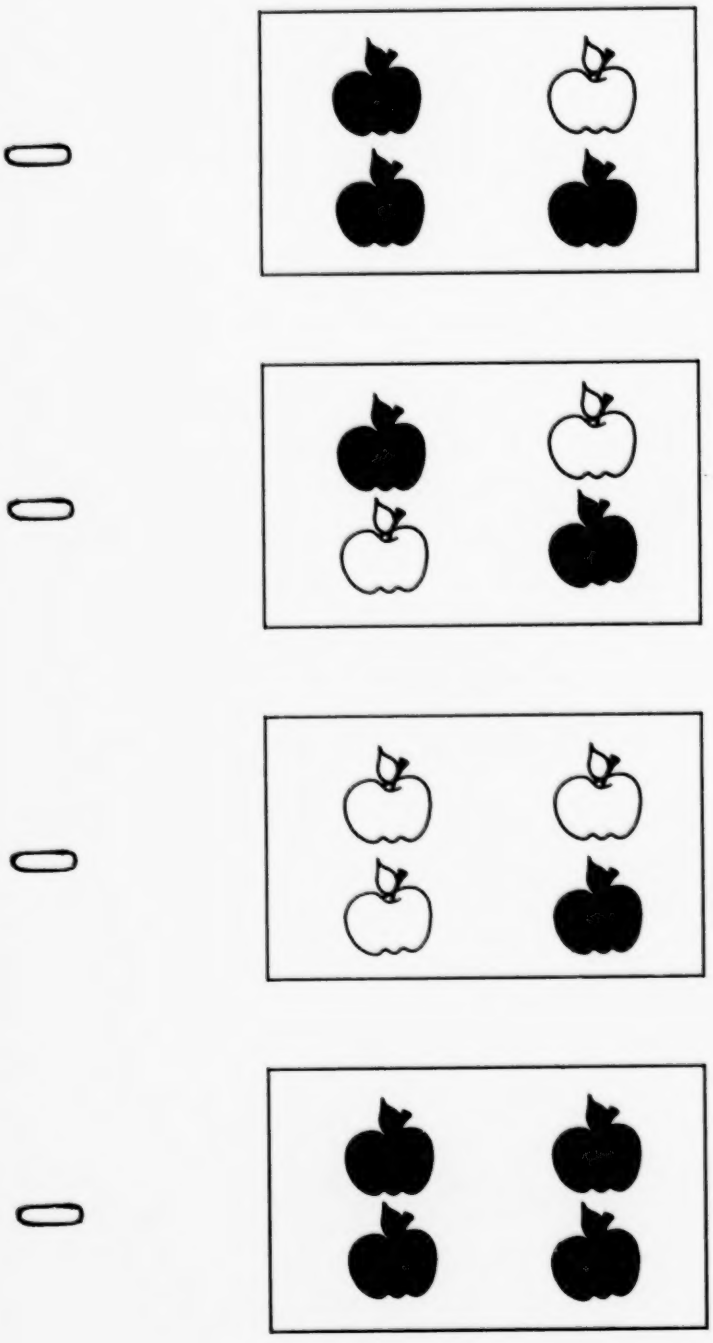
○ $\frac{1}{2}$ (incorrect answer)

○ $\frac{3}{4}$ (incorrect answer)

(b) What part of the set is shaded?

- ⬭ $\frac{2}{3}$ (correct answer)
- ⬭ $\frac{1}{3}$ (incorrect answer)
- ⬭ $\frac{1}{4}$ (incorrect answer)
- ⬭ $\frac{1}{2}$ (incorrect answer)

(c) Which set has $\frac{3}{4}$ of the apples shaded?



SKILL AREA: COMPUTATION

Objective 6

Add whole numbers having as many as three digits, with or without regrouping.

Description of Test Items

1. Test items will be presented in vertical format with the symbol "+."
2. The addends will be whole numbers from 10 through 999.
3. Items will include a variety of the following:
   a. two addends with no regrouping,
   b. three addends with no regrouping,
   c. two addends with one regrouping, or
   d. three addends with one regrouping.
4. There will be no more than one zero in any problem.

Description of Answer Choices

1. Incorrect answer choices will represent common errors in computation.
2. Incorrect answer choices for problems having two addends will not include the difference of the addends.

Example of Test Item

Work the problem. Mark your answer.

```
 327
  23
+ 14
```

⬭ 364 (correct answer)

⬭ 354 (computation error)

⬭ 350 (computation error)

⬭ 464 (computation error)

—3—

SKILL AREA: COMPUTATION

Objective 7

Subtract whole numbers having as many as three digits, with or without regrouping.

Description of Test Items

1. Test items will be presented in vertical format with the symbol "-."
2. Eligible numbers will be whole numbers from 10 through 999.
3. Each subtraction problem will have one minuend and one subtrahend.
4. There will be no more than one zero in any problem.
5. Some of the subtraction problems will require one regrouping and some will require no regrouping.

Description of Answer Choices

1. Incorrect answer choices will represent common errors in computation.
2. Incorrect answer choices will not include the sum of the numbers.

Example of Test Item

Work the problem. Mark your answer.

```
 304
- 92
```

⬭ 212 (correct answer)

⬭ 202 (computation error)

⬭ 292 (computation error)

⬭ 392 (computation error)

—3—

SKILL AREA: PROBLEM SOLVING

Objective 8

Solve one-step word problems involving addition of whole numbers.

Description of Test Items

1. All items will require only one operation.
2. No extraneous information will be given in a test item.
3. Eligible numbers will be whole numbers from 1 through 99.
4. Problems will not require regrouping.
5. An addition problem will have no more than three addends.
6. Neither money nor age problems will be used.
7. Each word problem will consist of two, three, or four sentences, with the total number of words not to exceed 30.

Description of Answer Choices

1. The numbers used in the answer choices will not exceed two digits.
2. All answer choices will be appropriately labeled.
3. Incorrect answer choices will represent common errors in problem solving (e.g., wrong choice of operations) as well as common errors in computation.

Example of Test Item

Solve. Mark your answer.

Karen had 13 marbles in a jar. Her brother put 25 more marbles in the jar. How many marbles were in the jar then?

⬭ 38 marbles (correct answer)

⬭ 18 marbles (computation error)

⬭ 25 marbles (common error in problem solving)

⬭ 12 marbles (incorrect operation)

—3—

SKILL AREA: PROBLEM SOLVING

Objective 9

Solve one-step word problems involving subtraction of whole numbers.

Description of Test Items

1. All items will require only one operation.
2. No extraneous information will be given in a test item.
3. Eligible numbers will be whole numbers from 1 through 99.
4. Problems will not require regrouping.
5. Each problem will have one minuend and one subtrahend.
6. Neither money nor age problems will be used.
7. A problem will consist of two, three, or four sentences, with the total number of words not to exceed 30.

Description of Answer Choices

1. All answer choices will be appropriately labeled.
2. Incorrect answer choices will represent common errors in problem solving (e.g., wrong choice of operations) as well as common errors in computation.

Example of Test Item

Solve. Mark your answer.

There are 96 seats on the school bus. Only 34 children rode the bus today. How many seats were empty?

- ⬭ 62 seats (correct answer)
- ⬭ 130 seats (incorrect operation)
- ⬭ 52 seats (computation error)
- ⬭ 120 seats (incorrect operation)

-3-

SKILL AREA: MEASUREMENT

Objective 10

Select the unit of measure used to determine length, weight/mass, or capacity/volume.

Description of Test Items

1. The measurement units that will be used are:

   Metric: centimeter, meter, kilometer, gram, kilogram, liter
   Customary: inch, foot, yard, pound, pint, quart, gallon

2. Picture stimuli may be used.

3. Items will include a variety of the following:

   a. length

   b. weight/mass

   c. capacity/volume

Description of Answer Choices

1. All answer choices will be expressed in customary or metric units. Customary and metric units will not appear in the same set of answer choices.

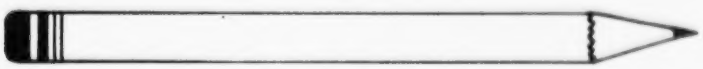
2. Customary units other than inch, foot, yard, pound, pint, quart, and gallon will not be used as distractors in problems concerning customary units. Metric units other than centimeter, meter, kilometer, gram, kilogram, and liter will not be used as distractors in problems concerning metric units.

3. No abbreviations will be used for units of measure.

Example of Test Item

Read the question. Mark your answer.

The length of your pencil would be measured in



- ⬭ centimeters (correct answer)
- ⬭ grams (incorrect choice of units)
- ⬭ kilograms (incorrect choice of units)
- ⬭ liters (incorrect choice of units)

SKILL AREA: GEOMETRY

Objective 11

Identify pictorial models of two- and three-dimensional shapes.

Description of Test Items

1. Two-dimensional figures will be restricted to circles, squares, rectangles, and triangles.

2. Three-dimensional figures will be restricted to cubes, spheres, cylinders, and cones.

3. Three-dimensional figures will be drawn with hatched lines for hidden edges.

4. Items will include a variety of the following:

   a. a two-dimensional figure with the name to be identified;

   b. the name of a two-dimensional figure with the figure to be identified;

   c. a three-dimensional figure with the name to be identified; and

   d. the name of a three-dimensional figure with the figure to be identified.

Description of Answer Choices

1. No set of answer choices will include both two- and three-dimensional figures having the same shape (e.g., a circle and a sphere will not appear in the same set of choices).

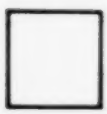
2. If a square is to be identified, a rectangle will not be depicted in an incorrect answer, and vice versa. Similarly, if a cube is to be identified, a rectangular solid will not be depicted in an incorrect answer, and vice versa.

3. Two-dimensional figures other than circles, squares, rectangles, and triangles and three-dimensional figures other than cubes, spheres, cylinders, and cones may be depicted or named in the distractors.

Examples of Test Item

Read each question. Mark your answer.

(a) Which picture below is a square?



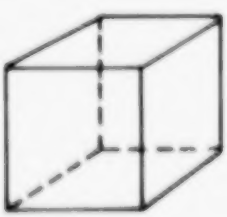
(correct answer)

(incorrect answer)

(incorrect answer)

(incorrect answer)

(b) What is the name of this shape?



- cube (correct answer)
- sphere (incorrect answer)
- cylinder (incorrect answer)
- cone (incorrect answer)

COMPLIANCE STATEMENT

TITLE VI, CIVIL RIGHTS ACT OF 1964; THE MODIFIED COURT ORDER, CIVIL ACTION 5281, FEDERAL DISTRICT COURT, EASTERN DISTRICT OF TEXAS, TYLER DIVISION

Reviews of local education agencies pertaining to compliance with Title VI Civil Rights Act of 1964 and with specific requirements of the Modified Court Order, Civil Action No. 5281, Federal District Court, Eastern District of Texas, Tyler Division are conducted periodically by staff representatives of the Texas Education Agency. These reviews cover at least the following policies and practices:

(1) acceptance policies on student transfers from other school districts;

(2) operation of school bus routes or runs on a non-segregated basis;

(3) nondiscrimination in extracurricular activities and the use of school facilities;

(4) nondiscriminatory practices in the hiring, assigning, promoting, paying, demoting, reassigning, or dismissing of faculty and staff members who work with children;

(5) enrollment and assignment of students without discrimination on the basis of race, color, or national origin;

(6) nondiscriminatory practices relating to the use of a student's first language; and

(7) evidence of published procedures for hearing complaints and grievances.

In addition to conducting reviews, the Texas Education Agency staff representatives check complaints of discrimination made by a citizen or citizens residing in a school district where it is alleged discriminatory practices have occurred or are occurring.

Where a violation of Title VI of the Civil Rights Act is found, the findings are reported to the Office for Civil Rights, Department of Health, Education and Welfare.

If there is a direct violation of the Court Order in Civil Action No. 5281 that cannot be cleared through negotiation, the sanctions required by the Court Order are applied.

TITLE VII, CIVIL RIGHTS ACT OF 1964; EXECUTIVE ORDERS 11246 AND 11375; TITLE IX, 1973 EDUCATION AMENDMENTS; REHABILITATION ACT OF 1973 AS AMENDED; 1974 AMENDMENTS TO THE WAGE-HOUR LAW EXPANDING THE AGE DISCRIMINATION IN EMPLOYMENT ACT OF 1967; AND VIETNAM ERA VETERANS READJUSTMENT ASSISTANCE ACT OF 1972 AS AMENDED IN 1974.

It is the policy of the Texas Education Agency to comply fully with the nondiscrimination provisions of all federal and state laws and regulations by assuring that no person shall be excluded from consideration for recruitment, selection, appointment, training, promotion, retention, or any other personnel action, or be denied any benefits or participation in any programs or activities which it operates on the grounds of race, religion, color, national origin, sex, handicap, age, or veteran status (except where age, sex, or handicap constitute a bona fide occupational qualification necessary to proper and efficient administration). The Texas Education Agency makes positive efforts to employ and advance in employment all protected groups.

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